Notes on our Hepaticæ.

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I. NORTHERN SPECIES.

In a recent address, Simon Newcomb made the prophecy that the time would come when he who made a discovery in the literature of a science would be entitled to as great recognition as he who made a discovery in nature. With the sharply defined division of labor and the elaborate systems of indexing now in use this is hardly likely to prove true in botanical science; yet we have not passed the time when the discovery of forgotten works does not produce extensive upheavals in the nomenclature of long established species and supplants names long familiar by others often less euphonious and simple. In the literature of the Hepaticæ two works, neither of which has any special merit or originality, have been the source of much contention and difference of opinion, and, in connection with the earlier works of Necker[1] and Raddi[2], really form the foundation of generic distinctions among the Hepaticæ. Copies of these works, though long sought for, have only recently come into our possession. They bear the titles: "A Natural Arrangement of British Plants," by Samuel Frederick Gray, 2 vols. London, 1821, and "Commentationes Botanicæ. Observations Botaniques par B. C. Dumortier." Tournay, 1822.

In the first named work the species of Jungermania, of which the British species had been elaborately monographed by the elder Hooker five years before[3], were placed in new genera, which, for the greater part, corresponded to the sections already indicated in Hooker's work. The genera thus established were: Riccardius, Pallavicinius, Herverus, Papa, Blasia, Maurocenius, Salviatus, Pandulphinus, Marchesinus, Cavendishia, Martinellius, Mylius, Nardius, Jungermannia, Bazzanius, Scalius, Cesius, Herbertus[4], Lippius, and Kantius. Of these Blasia had been named by Micheli[5], and adopted by Linnæus; Hooker, however, had united it with

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[1]Elementa Botanica, 1790.

[2]Jungermannisgrafia Etrusca in *Atte d. Soc. Ital. d. Scienze*, XVIII, 1–45 (1818).

[3]British Jungermanniæ, 1816.

[4]In the text (vol. I, pp. 684, 705) this name is given to two entirely distinct genera; the former, however, is changed to Pallavicinius later in the volume (p. 775).

[5]Nova plantarum genera, 1729.

Jungermannia. Jungermannia was first established by Rappius[6], and being adopted by Linnæus and all subsequent writers, stands to-day as the typical genus of the order. Cavendishia was a name given for a group of plants which had been designated as Porella by Dillenius[7], and which, singularly enough, had been placed by Linnæus with the Musci; the genus in question has latterly been more commonly known under the name of Madotheca. Of the other genera Herverus, Papa, Maurocenius and Salviatus had already been named by Raddi[8] as Metzgeria, Pellia, Fossombronia and Frullania, respectively. Pandulphinus had also been named Lejeunea by Madamoiselle Libert a year before[9]. Several of Gray's genera, with the termination properly changed to the feminine form, are now adopted by most hepaticologists; among these are Pallavicinia, Mylia, Nardia, Bazzania, Scalia, Herberta, and Kantia[10]. Cesia and Lippia must yield to names previously given to genera of flowering plants. This leaves two genera, Riccardia and Martinellia, concerning which there is considerable difference of opinion, the names being adopted by some and rejected by others; a statement of the question of their adoption, which presents some interesting problems bearing on the question of priority, will be stated below.

In Dumortier's work, which covers a wide range of botanical matter, chapitre cinquieme is entitled *Essai d'une Monographie des Jongermannes*. The essential part of this essay of fourteen pages is a division of the pre-Linnæan genus Jungermania into nineteen genera, as follows: Codonia, Madotheca, Lejeunea, Phragmicoma, Jubula, Radula, Mesophylla, Jungermania, Thricbrolea, Saccogyna, Cincinnulus, Schisma, Marsupella, Mniopsis, Dilæna, Fasciola, Aneura, Scopulina, and Blasia, all of which, except Jungermania, Lejeunea and Blasia, were new. As Dumortier was ignorant of the work of either Raddi in Italy or Gray in England, he naturally duplicated several genera. Thus Madotheca = Porella Diel. Fasciola, Codonia and Scopulina are, respectively, Metzgeria, Fossombronia and Pellia of Raddi; while Dilæna, Mesophylla, Mniopsis, Schisma and Cincinnulus are the equivalents of Pallavicinia, Nardia, Scalia, Herberta, and Kantia of Gray. Jubula, although

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[6]Flora Jenensis, 2d ed., 1726.

[7]Historia Muscorum, 1741.

[8]Loc. cit.

[9]In *Ann. gen. sc. Phys.* V, 372 (1820).

[10]A contribution of interest on Gray's genera, by Dr. Carrington, may be found in volume X of the Transactions of the Botanical Society, Edinburgh (1870).

originally including Raddi's species of Frullania, had for its type species *Jungermania Hutchinsiæ* Hooker, and as this is the type of a very distinct genus, properly retains this name. Phragmicoma, although preceded by Gray's Marchesinus, has stood as a genus until recently, when it has been united with Lejeunea by one of the masters in hepaticology in his recent revision[11]. The distinctive characters of Marsupella have been pointed out, and it has been re-established by the same masterly hand[12]. Thricholea (afterwards changed by Dumortier himself to Tricholea, and by Nees corrected to Trichocolea) and Saccogyna still stand as good genera. This leaves the two genera, which have been referred to already, Aneura and Radula. The case of the first is rather simple: Riccardius, established by Gray, contained three Linnæan species, viz: Jungermania multifida, J. pinguis and Riccia fluitans. Aneura, established a year later by Dumortier, contained four, viz: Jj. multifida, sinuata, pinguis and palmata. The name Riccardia, being preoccupied elsewhere, as is the earlier Candollea of Raddi, there seems little reason why Aneura should not be maintained, excluding, of course, the third species of Riccardius, which Gray, attracted by superficial resemblance, had erroneously placed here.

The other case is more complicated. Gray established the genus Martinellius, of which the first-named species was Jungermania complanata L., followed by eight others, including J. nemorosa and J. spinulosa. A year later Dumortier established the genus Radula, of which the first species was the same J. complanata L., followed by, essentially, the same species. In a later work Dumortier[13] divided this genus into three sections: 1. Radulotypus, of which complanata is the type; 2. Scapania, of which nemorosa is a type; and 3. Plagiochila, of which spinulosa is a type. Still later[14] he established the two latter sections as genera which have since been properly recognized as such, and with the advance of the study in other regions have so grown as to contain a very extensive array of species. If we are to adopt Gray's nomenclature in this case, the name Radula must certainly be displaced by Martinellia, as Dr. Carrington has well observed[15]. What then becomes of Radula, the next oldest

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[11] Richard Spruce. Hepaticæ of the Amazon and of the Andes of Peru and Ecuador. Trans. and Proc. of the Bot. Society (Edinburgh) XV. (1885).

[12] Revue Bryologique, VIII, 89–104 (1881).

[13] Sylloge Jungermannidearum Europæ indigenarum, 1831.

[14] Recuiel d'Observations sur les Jungermanniacées, 1835.

[15] British Hepaticæ, p. 52.

name? Shall it displace Scapania or Plagiochila? Or in a case which involves so much difficulty and can certainly disturb nothing outside of the three genera in question, is it not the part of wisdom to reject Gray's name and leave the three names so long established intact, as has been done by Spruce, Carrington, and most of the English school. In any case the adoption of Martinellia for Scapania, as done by Dr. Lindberg, is unwarranted.

The relations of these early established genera may be made more clear by the following table:

RADDI *1820*	GRAY *1821*	DUMORTIER *1822*	
Rœmeria	=Riccardius	=*Aneura*	
	Pallavicinius	=Dilaena	=Steetzia Lehm 1846.
Metzgeria	=Herverus	=Fasciola	
Pellia	=Papa	=Scopulina	
Fossombronia	=Maurocenius	=Codonia	
Frullania	=Salviatus	=Jubula	
	Pandulphinus	=*Lejeunea* Libert 1820.	
	Marchesinus	=Phragmicoma	=*Lejeunea* Spruce
Antoirea, Bellincinia	=Cavendishia	=Madotheca	=*Porella* Dill. 1741.
Candollea	=Martinellius	=Radula	*Radula* Dum. 1835.
	Mylius	=	*Scapania* Dum. 1835.
			Plagiochila Dum. 1835.
	Nardius	=Mesophylla, Marsupella	
	Bazzanius		
		Thricholea	=*Trichocolea* Dum.
	Scalius	=Mniopsis	
	Cesius, *Herbertus*	= Schisma	=*Gymnomitrium* Nees, 1833.
			=Sendtnera Nees, 1845.
	Lippius	= *Saccogyna*	
Calypogeia=	*Kantius*	=Cincinnulus	

Since the publication of the Descriptive Catalogue[16], many changes have become necessary, some of which had escaped notice at the time of publishing that paper because of the absence of much of the scattering hepatic literature, and many more from the investigations made since its publication. In the review of the species of the "manual region" the following changes become necessary, and since necessary the sooner we become familiar with them the better:

Frullania Grayana (p. 66) becomes F. Asagray'ana, the original form of the name, which has been misquoted by Americans in its shortened form, beginning with Sullivant. "Frullania Hutchinsiæ var." (p. 65) becomes *Jubula Hutch-*

[16] Underwood. Descriptive Catalogue of North American Hepaticæ, north of Mexico. In. *Bull. Ill. State Lab. Nat. Hist.* II, 1-133 (1884), to which page references are made in the corrections.

insiæ (Hook.) Dum., var. *Sullivantii* Spruce, described in full in his *Hepaticæ of the Amazon*, p. 62.

Phragmicoma clypeata (p. 73) becomes *Lejeunea clypeata* (Schw.) Sulliv., to which *L. calyculata* Tayl. (p. 69) is reduced as a synonym based on an examination of Taylor's specimen in the Gray Herbarium. L. cucullata (p. 71 not of Nees) becomes *L. diversiloba* Spruce, the true *L. cucullata* Nees being a Javan plant.

L. echinata Tayl. (p. 72) is properly *L. calcarea* Libert, as the species was originally named in 1820. The use of Taylor's name illustrates one of the pernicious principles that has been introduced into the system, and is even now maintained by some botanists. The plant was first described by Hooker in 1816 under the varietal name "Jungermannia hamatifolia *B* echinata." Madamoiselle Libert describes it as a species in 1820 as a type of her new genus Lejeunea with the specific name, "calcarea"; Taylor, in 1844, rejected Madamoiselle Libert's name and revived the varietal name of Hooker, which plainly has no claim to priority, not having been used by him as a *specific* name.

L. testudinea Tayl., *L. cyclostipa* Tayl., *L. polyphylla* Tayl. and *L. longiflora* Tayl., should all be stricken from our flora, Spruce having pointed out the fact that they are all South American species, erroneously reported from Ohio by mistakes in labels.

Madotheca (p. 74) must be replaced by the pre-Linnæan name Porella of Dillenius. It is a singular fact that the name Madotheca should have remained so long undisturbed, since Linnæus himself adopted Dillenius' name, although he erroneously placed the plant among the Musci. Our species become *P. pinnata* L. (= Madotheca porella, p. 76), *P. platyphylla* (L.) Lindb. (p. 75), *P. thuja* (Dicks.) Lindb. (p. 75), *P. rivularis* (Nees.) (p. 74), and *P. Sullivanti* (Aust.) (p. 75). Blepharozia (p. 80) returns to Ptilidium and our species is *P. ciliare* (L.) Nees. Another erroneous principle of nomenclature is here illustrated. Blepharozia was established as a sectional or subgeneric name by Dumortier in his *Sylloge*, 1831, but was not raised to generic rank until 1835; meanwhile (1835) Nees had established for the same plant the genus Ptilidium, which must stand as the first *generic* name.

Sendtnera (p. 81) becomes Herberta, as noted above, and our species is *H. adunca* (Dicks.) S. Gray.[17]

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[17] Our species has erroneously been referred to S. juniperina, which is a much more robust species of tropical America.

Cephalozia catenulata (p. 95 *et Auct. Amer.*, not of Lindenb.) is a new species described by Spruce under the name of C. Virginiana.[18]

C. multiflora (p. 94) was erroneously described by Lindberg and corrected by Dr. Spruce;[19] it should, therefore, read *C. multiflora* Spruce, with some alteration in the specific description.

C. Francisci, var. fluitans (p. 96), becomes *C. fluitans* (Nees.) Spruce.[20]

Calypogeia (p. 85) becomes Kantia, as noted above, and our species become *K. trichomanis* (Dicks.) S. Gray, and *K. Sullivanti* (Aust.).

Trichocolea Biddlecomiæ (p. 82), imperfectly described, presents no characters in the description which merit for it a specific rank. No specimens are in existence, so far as we can find; it will, therefore, drop from the list.

Scapania compacta, var. irrigua (p. 108), becomes *S. irrigua* (Nees) Dum. *S. breviflora* Tayl. (p. 110), as seen in Taylor's own specimen and drawing in the Gray herbarium, is a synonym of S. nemorosa. S. albicans, var. taxifolia (p. 108) is removed to Diplophyllum, and its nomenclature is *D. albicans* (L.) Dum., var. *taxifolium* (Nees).

Lophocolea minor (p. 89, Aust. *Hep. Bor.-Am.* No. 65b, not of Nees), is *L. Austini* Lindb., while L. crocata (p. 90, Aust. *Hep. Bor.-Am.* No. 65, not of Nees), is the true *L. minor* Nees, as pointed out by the late Dr. Lindberg.[21]

Chiloscyphus Drummondii Tayl. (p. 88) drops out of the list as a synonym of Harpanthus scutatus. There is a strange mortality among Taylor's American species, and further study of his private collection, which now forms part of the Gray herbarium, will doubtless be a profitable work in clearing up some problems in synonymy.

Coleochila (p. 97) becomes Mylia, as noted above, and our species is *M. Taylori* (Hook.) S. Gray.

Pleuranthe olivacea (p. 90), another of Taylor's species, is *Harpanthus Flotovianus* Nees.

Jungermania polita (p. 104 Aust. *Hep. Bor.-Am.* No. 46, not of Nees) is described by Dr. Lindberg as a new species, *J. laxa* Lindb.[22]

Marsupella Dum., following Dr. Spruce, is to be sepa-

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[18] Spruce; on Cephalozia, 1882, p. 37.

[19] Spruce, l. c. 37.

[20] Spruce, l. c. 50.

[21] Hepaticæ in Hibernia mense Julii, 1873, lectæ; in *Acta Soc. Scient. Fenn.* X, 503 (1875).

[22] Loc. cit. 529.

rated from Nardia (p. 113) and our species become *M. sphacelata* (Gies.) Dum. (p. 114), *M. emarginata* (Ehrh.) Dum. (p. 114) and *M. adusta* (Nees) (p. 114). Nardia, however, receives a considerable accession from Jungermania as follows: *N. hyalina* (Lyell) Carr. (p. 102), *N. crenulata* (Sm.) Lindb.[23] (p. 101), *N. crenuliformis* (Aust.) Lindb. (p. 101), *N. biformis* (Aust.) Lindb. (p. 102), and *N. fossombronioides* (Aust.) Lindb. (p. 101) the last forming a distinct subgenus.

Cesia (p. 115) is preoccupied as Cæsia (R. Br. 1810) in the Liliaceæ; hence our species must be referred to *Gymnomitrium* (Nees, 1833) and becomes *G. concinnatum* (Lightf.) Dum.

Steetzia (p. 57) becomes Pallavicinia as noted above, and our species is *P. Lyellii* (Hook.) S. Gray.

The species which since the days of Schweinitz, the father of American hepaticology, has been confused under the name of A. palmata (p. 54), is a very distinct species which has been described as *A. latifrons* Lindb.[24]

Lunularia cruciata (p. 43) was described by Micheli long before Linnæus called it Marchantia cruciata; hence it must be called *Lunularia vulgaris* Mich.[25]

Duvalia (p. 35) and Grimaldia (p. 35) form one genus as early held by Bischoff[26] and later insisted upon by Lindberg[27], who, however, reduces all to the genus *Duvalia* (Nees, 1817). As there is an earlier *Duvalia* (Haworth, 1812) the species must be placed in *Grimaldia* (Raddi, 1818). Our species of Duvalia thus becomes *Grimaldia rupestris* Lindenb.

Riccia bifurca (p. 23) is omitted, there being no probability that it is a member of our flora.

Sphærocarpus Micheli (p. 30) has a much earlier name, *S. terrestris* Mich.,[28] which must take its place in our list.

Four species are known only from their original descriptions, no specimens, so far as we are aware, existing in any American collection; these are (1) *Frullania Pennsylvanica* Stephani, (2) *Jungermania Gillmani* Aust., (3) *J. Wattiana* Aust. and (4) *Cephalozia pleniceps* (Aust.) Und. These should be specially sought by collectors in the higher latitudes. Two species must be added to our list, viz.: (1) *Frullania dilatata* (L.) Nees, and (2) *Pellia endiviæfolia* (Dicks.) Dum., which has

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[23] Loc. cit. 530.

[24] Manipulus Muscorum Secundus, in *Notiser pro Fauna et Flora Fennica*, XIII, 372 (1874).

[25] Micheli, loc. cit. 4, tab. 4.

[26] Bemerkungen über die Lebermoose, in *Acta Acad. Cæs. Leop.* XVII, 1025 (1835).

[27] Musci Novi Scandinavici, 285.

[28] Micheli, loc. cit. 4. tab. 3.

hitherto been confused with P. epiphylla. Both of these are well known European species. This brings the flora of the "Manual region" to 140 species, which, as compared with the former publication in Gray's Manual by Sullivant, is an increase of 31 species. It should be noted, however, that from Sullivant's enumeration should be deducted: (1) those species which were then erroneously accredited to our district (5 species); (2) species included which have since been reduced to synonyms (8 species); and (3) species included in his list which were beyond the limits of the "Manual region" (13 species). After making these legitimate deductions, the ratio stands 83 to 140, which represents a fair advance when we consider the few who have studied or collected hepatics in America during the last twenty-six years.[29]

From Canada and the other British provinces are a considerable number of additions to report, due chiefly to the untiring energy of Prof. John Macoun. We wait the publication of these by their collector. We are now at work on a revision of the Pacific species, while a considerable number of additions collected in Florida by Capt. Donnell Smith, several years ago, have been generously placed at our disposal for study and will be examined at an early day. Two rare Southern species, *Riccia Donnelliia* Aust. and *Thallocarpus Curtisii* Aust., will be distributed in the next issue of *Hepaticæ Americanæ* through the generosity of Dr. N. L. Britton, of Columbia College. Working, as time has permitted, almost alone for the past eight years, with almost no one who would or could collect in remote parts of the country, the study has at times been very discouraging. But times have changed; collectors are more abundant, and collect more intelligently; collections come to hand faster than the crowded leisure time of a busy professional life will serve to examine; but that there is an "awakening" in the study of these neglected plants, is a ground for hope for the future. There is as yet only a beginning made; the field is large enough for any number of workers.

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[29] The "4th Revised edition" of Gray's Manual on our table containing Sullivant's *Mosses and Hepaticæ of the Eastern United States* bears the date, March 10, 1863.